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**Jean-Louis H. GUERET** )  
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For: APPLICATOR AND APPLICATION )  
      DEVICE INCLUDING THE )  
      APPLICATOR )

**SUBMISSION OF ENGLISH LANGUAGE TRANSLATION OF**  
**PROVISIONAL APPLICATION**

Commissioner for Patents  
P.O. Box 1450  
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Sir:

Applicant hereby submits an English language translation of Provisional  
Application No. 60/463,050, filed April 16, 2003, in advance of any requirement from the  
Patent Office. It is requested that this translation be placed in the provisional  
application file wrapper.

Respectfully submitted,

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AN APPLICATOR AND A PACKAGING AND APPLICATOR DEVICE  
INCLUDING SUCH AN APPLICATOR

The present invention relates to applicators for cosmetics, including care products, and more particularly  
5 applicators for applying a substance on keratinous fibers, in particular the eyelashes or the eyebrows.

Conventional brushes used for making up the eyelashes or the eyebrows comprise a metal core made up of two twisted-together strands with bristles which are  
10 clamped between the twisted strands. Such brushes are not suitable for being passed through a microwave oven in order to modify properties of the substance, e.g. prior to application. In addition, with certain compositions, the bristles are too floppy to be suitable for smoothing  
15 the substance on the eyelashes.

It is also known to make combs for making up the eyelashes or the eyebrows by molding a plastics material. The use of a plastics material makes such combs suitable for being passed through a microwave oven. In addition,  
20 a comb can be made with teeth that are stiffer than the bristles of a brush, thus making it possible to use different formulations. Nevertheless, the lack of flexibility of the teeth can lead to a lack of comfort during application.

European patent application EP 1 155 637 describes an applicator having a core that is not twisted, comprising a support presenting a plurality of holes in which bristles are held by deforming the holes after the  
25 bristles have been inserted therein, by imparting creep to the material of the support.  
30

There exists a need to further facilitate manufacture of an applicator comprising a non-metallic support and bristles fitted to the support.

The invention seeks to provide a novel applicator  
35 for applying a cosmetic, in particular on keratinous fibers, and specifically on the eyelashes or the eyebrows.

In one aspect of the invention amongst others, the novel applicator may be characterized by the fact that it comprises an applicator element comprising:

- a support of plastics material; and
- 5     · at least one bundle of bristles carried by the support, a first end of the bundle defining a first row of bristles extending in the longitudinal direction of the support, the bundle being split going away from said first end into at least two sub-bundles defining second and third rows of bristles extending at least in part  
10     outside the support.

The formation of a plurality of rows of bristles by splitting a bundle of bristles makes it easier to manufacture the applicator industrially at low cost, in particular by overmolding the support material on the  
15     bristles.

The invention also makes it possible to provide an applicator that is simple and comfortable to use, enabling substance to be well spread on the fibers that are to be treated, with the fibers being significantly  
20     lengthened and curled.

An applicator element made in accordance with the invention also makes it possible, where appropriate, to use a microwave oven for heating the substance for application, while still presenting the advantages of a  
25     mascara brush, in particular in terms of comfort in application.

The applicator carries bristles that have been fitted thereto, i.e. bristles that are made separately, upstream from the process of manufacturing the  
30     applicator, and then implanted in the applicator during manufacture of the support or after the support has been manufactured.

The first row of bristles may have a number of bristles that is substantially equal to the total number  
35     of bristles in the second and third rows. The second and

third rows of bristles may optionally have substantially the same number of bristles.

The first row of bristles preferably extends outside the support, however in a variant, the first row of  
5 bristles need not project to the outside of the support.

The second and third rows of bristles can each constitute a succession of tufts leaving the support through respective distinct orifices.

The first row may comprise a substantially  
10 continuous sheet of bristles or a succession of tufts leaving the support via distinct orifices.

A tuft of bristles may be constituted by two to 200 bristles, for example, preferably by four to 100 bristles, and more particularly by five to 50 bristles.

15 In order to form the second and third rows, the bundle of bristles may be split inside the support or outside it.

The second and third rows of bristles may extend from the same side of the support relative to a  
20 separation plane containing the longitudinal axis of the support, in particular a plane perpendicular to the midplane, with the first row projecting from the opposite side.

The bristles may be held on the support other than  
25 by overmolding the support material onto the bristles. For example, the bristles may be held to the support by local melting of material.

The bristles may be made out of a material that is identical to or different from the material constituting  
30 the support.

The support may be made in a variety of shapes, and in particular with at least one row of teeth. The teeth may be made out of the same material as the support, or in a variant they may be made out of some other material,  
35 e.g. by molding with dual injection of material. The teeth may be made in particular out of a material that is

more flexible than the material constituting the portion of the support that carries the bristles.

In a plane perpendicular to its longitudinal axis, the major dimension of the support may be less than or  
5 equal to 5 millimeters (mm), for example.

When each of the second and third rows of bristles comprises a succession of tufts of bristles, the tufts of bristles in the second row may be disposed substantially at the same level as the tufts of bristles in the third  
10 row, along the longitudinal axis of the support.

In a variant, the tufts of bristles in the second row may be axially offset relative to the tufts of bristles in the third row. The applicator may then comprise a succession of tufts of bristles extending in  
15 alternation along two diverging directions.

The applicator may include tufts of bristles obtained by splitting the bundle of bristles that open out through openings situated respectively in two opposite faces of the support, or in a variant in the  
20 same face, with the openings being in alignment or disposed in a staggered configuration, for example.

When the support is made with teeth, the teeth may be disposed in at least one row extending between two rows of bristles, for example, in particular between the  
25 second and third rows.

The longitudinal axis of the support may be rectilinear, or in a variant it may be curvilinear, in particular it may be substantially in the form of a portion of a circular arc matching the radius of the  
30 eyelids at the roots of the eyelashes.

The apparent length of bristles in one row at least may vary along the longitudinal axis of the support, and in particular may vary continuously, passing through a single extremum, e.g. a maximum or a minimum, or it may  
35 vary periodically so that the envelope surface defined by the free ends of the bristles presents undulations along

the longitudinal axis of the support when the support is observed from the side.

The applicator may include orifices through which the bristles leave the support, the orifices presenting  
5 axes that are perpendicular to the longitudinal axis of the support.

In a variant, the orifices may present axes that are directed obliquely relative to the longitudinal axis of the support, e.g. in alternation towards its distal end  
10 and towards its proximal end, such that the bristles cross when the support is observed from the side.

The material of the support may be a plastics material that is rigid, or semi-rigid, or it may be an elastomer.

15 In another of its aspects, the invention also provides an applicator which may be characterized by the fact that it comprises:

- at least three rows of bristles; and
- a support carrying the bristles, being overmolded  
20 thereon.

The invention also provides a packaging and applicator device including an applicator presenting at least one of the embodiment features defined above.

The device may include a receptacle containing the  
25 substance to be applied and a wiper member for wiping the applicator element as it leaves the receptacle. The applicator element may be fixed to one end of a stem whose other end is secured to a handle member which also constitutes a cap for closing the receptacle.

30 The invention can be better understood on reading the following detailed description of non-limiting embodiments thereof, and on examining the accompanying drawings, in which:

· Figure 1 is a diagrammatic axial section of an  
35 embodiment of a packaging and applicator device made in accordance with the invention;

· Figure 2 is a diagrammatic and fragmentary cross-section on II-II of the Figure 1 device;

· Figure 3 is a view analogous to Figure 2 showing a variant embodiment of the invention;

5       · Figure 4 is a diagrammatic perspective view showing in isolation an applicator element in accordance with another variant embodiment of the invention;

· Figure 5 is a section on V-V of Figure 4;

10       · Figures 6 to 10 are views analogous to Figure 2, showing other variant embodiments;

· Figures 11 and 12 are diagrammatic views showing various ways amongst others of splitting the bundle of bristles;

15       · Figure 13 is a fragmentary diagrammatic plan view of an applicator element in accordance with another variant embodiment of the invention;

· Figures 14 to 18 are fragmentary diagrammatic side views showing other applicators made in accordance with the invention;

20       · Figures 19 to 36 are diagrammatic cross-section views of different examples of some sections of bristles that can be used, amongst others;

25       · Figures 37 to 40 show various examples of structures and surface states that can be used for the bristles;

· Figure 41 shows an undulating bristle; and

· Figure 42 shows a bristle that has been curved while hot.

30       The packaging and applicator device 1 shown in Figure 1 comprises a receptacle 2 containing a substance P for application to the eyelashes or the eyebrows, e.g. mascara, and an applicator 3 comprising a stem 4 provided at its bottom end with an applicator element 5 and at its opposite end with a handle member 6 that also serves to  
35       close the receptacle 2. The receptacle has a neck 7 with an outside thread so as to enable the handle member 6 to be screwed thereon.

The substance P may be intended to color the eyelashes, and/or to lengthen them, and/or to curl them. The substance P may also have a treatment effect.

5 A wiper member 8 is fixed inside the neck 6 to wipe the stem 4 and the applicator element 5 as they leave the receptacle. The wiper member 8 comprises, for example, a flexible lip 9 defining a circular orifice of diameter corresponding substantially to the diameter of the stem 4.

10 Naturally, the invention is not limited to using a particular wiper member and other wiper members can be used, for example wiper members comprising a block of foam and/or defining one or more optionally-flocked slots.

15 In the example shown, the stem 4 is rectilinear, however it would be curved without going beyond the ambit of the present invention.

In addition, the stem 4 is shown as being fixed relative to the handle member 6, however it could be 20 movable relative thereto, for example by means of an articulated connection, in particular a ball-and-socket joint.

The applicator element 5 comprises a support 15 made of plastics material, it is elongate along a longitudinal 25 axis X which, in the example shown, is rectilinear and coincides with the longitudinal axis of the stem 4.

The support 15 carries a bundle 20 of bristles which, in the example described, emerge from one side of the support 15 in the form of a first row 50 and is split 30 into two portions that emerge from the opposite side of the support 15 in the form of a second and third rows 30 and 40.

In the example described, the support 15 is overmolded onto the bundle 20 of bristles, however in a 35 variant the support 15 could be made separately and then the bristles could be put into place therein and



assembled to the support 15, e.g. by locally melting material.

5 In the example described, the rows 30 and 40 open out via openings situated respectively in two opposite faces 31 and 41 of the support 15. In Figure 2 it can be seen that the rows 30 and 40 lie on the same side of a separation plane S containing the axis X, while the first row 10 is situated on the opposite side thereof.

10 Each of the rows 30 or 40 of bristles can extend from the support 15 via a single opening of oblong shape elongate parallel to the axis X, or as is the case in the example described, via a succession of respective openings 32 and 42 each enabling a tuft of bristles to emerge.

15 The number of bristles in each row 30 or 40 in the example described corresponds to half the number of bristles in the row 50, however the applicator element could be made differently without going beyond the ambit of the present invention, and in particular one of the rows 30 and 40 could have significantly more bristles than the other row, in other words the bundle of bristles could be split in a ratio other than 50/50.

20 In the example shown, the bristles of the first row 50 are of non-zero length, however it would not go beyond the ambit of the present invention for the bristles of the row 50 to be of substantially zero length, as shown in Figure 3, with the bristles of this row 50 being shaved off after the support 15 has been molded, for example. The bristles of the first row 50 need not even extend as far as the outside of the support.

30 The support 15 could be made with a shape different from that shown in Figures 1 and 2, and in particular it could have at least one row of teeth 60 extending between the rows 30 and 40 of bristles, as shown in Figures 4 and 5.

35 Figure 4 shows that the support 15 can be made with an endpiece 16 at one end for insertion in the stem 4.

In a variant, the applicator element, regardless of its shape and how the bristles are implanted, could be made integrally with the stem 4 by molding material.

5 The bundle of bristles 20 can be split inside the support as shown in Figures 2, 3, and 5, or outside the support 15, in particular close to its outside surface, as shown in Figure 6.

The example of Figure 7 differs from that of Figure 6 in that the length of the bristles in the first  
10 row 50 is substantially zero.

In this figure, it can also be seen that the support can present a variety of shapes in cross-section other than those shown in Figures 2 and 3, and in particular it can present a section that is substantially circular, for  
15 example.

In the example of Figure 8, the bristles of the rows 30 and 40 meet outside the body 15.

The rows 30 and 40 can extend in diverging planes Y and Z, which planes can be parallel to the longitudinal  
20 axis X when the axis is rectilinear.

As can be seen in Figure 2, the planes Y and Z can be symmetrical about a midplane M of symmetry for the support 15. The axis X can be contained in said midplane M.

25 In a variant, the planes Y and Z need not be disposed symmetrically about the midplane M of the support 15, as shown in Figure 9.

The angle  $\alpha$  between the planes Y and Z can lie in the range  $3^\circ$  to  $90^\circ$ , for example, and can be close to  
30  $40^\circ$ , for example.

In the examples described above, the applicator element 5 has three rows 30, 40, and 50 of bristles, however it would not go beyond the ambit of the present invention for the applicator element to have more than  
35 three rows of bristles, for example four rows of bristles.

By way of example, Figure 10 shows an applicator element comprising two bundles 20 and 20' of bristles which are split so as to form two rows 30 and 40 for the bundle 20 and two rows 30' and 40' for the bundle 20'.

5 The rows 30 and 30' can be united within a single sheet, as can the rows 40 and 40', as shown. Where appropriate, the support 15 can be made with a row of teeth 60.

The rows of bristles 30, 40, and 50 can be grouped together in tufts or they can extend in substantially  
10 continuous sheets..

When the bristles of the rows 30 and 40 are grouped together in tufts, each tuft 33 or 43 of one of the rows 30 or 40 can be situated at substantially the same level along the axis X as a tuft in the other row, i.e. without  
15 any offset along the axis X, as shown in Figure 4.

The tufts 33 and 43 can also be offset along the axis X, as shown in Figure 11. In this figure, the support 15 is not shown. In a variant, as shown in Figure 12, the bristles of the rows 30 and 40 can extend  
20 in the form of sheets that are substantially continuously along the axis X.

Where appropriate, the tufts 33 and 43 can also extend through orifices 32 and 42 that are substantially in alignment, as shown in Figure 13, the axes of these  
25 orifices being perpendicular to the axis X, for example.

The bristles of the rows 30 and 40 can extend substantially perpendicularly to the longitudinal axis X.

In a variant, as shown in Figure 14, the tufts of bristles 33 and 43 and the axes of the corresponding  
30 orifices 32 and 42 can be inclined respectively towards the proximal end of the applicator element 5 and towards its distal end, such that when the applicator element is observed from the side, the tufts of bristles 33 and 43 cross.

35 It is possible to give the envelope surface defined by the free ends of the bristles of the applicator element 5 a variety of shapes, in particular as a

function of the zone to be treated and of the effect that it is desired to obtain.

By way of example, the bristles of the applicator element 5 can be machined in such a manner that the ends of the bristles of the row 50 extend along a line L that is outwardly concave when the applicator element is observed from the side, as shown in Figure 15. By way of example, the curvature of the line L can correspond substantially to that of an eyelid.

It is also possible, as shown in Figure 16, to machine the rows of bristles which extend outside the brush in such a manner as to form undulations, e.g. in order to comb the eyelashes or the eyebrows better.

The support 15 can be made with a longitudinal axis X that is not rectilinear, for example an axis that is curvilinear, as shown in Figure 17, the bristles of the rows 30 and 40 leaving a concave or convex face of the applicator element 5, for example.

When the support 15 is made with teeth, the teeth can alternate along the axis X with the tufts of bristles 33 and 43, as shown in Figure 18.

All kinds of bristle can be used. The bristles can be natural or synthetic, in particular being selected from bristles of polyethylene, of polypropylene, of ethylene/propylene copolymer, of polyamide, in particular of 6-6, 6-10, 6-11, or 6-12 polyamide, of polyester, of polyvinyl chloride, of polytetrafluoroethylene (Teflon®), of polyethylene terephthalate, or of thermoplastic elastomer.

The support can be made in particular out of polyethylene, of polypropylene, or of an elastomer.

It is possible to use bristles presenting a variety of cross-sections.

In particular, it is possible to use bristles presenting a cross-section having one of the shapes shown in Figures 19 to 36 in diagrammatic manner, for example a circular shape with a flat as shown in Figure 19,

flattened as shown in Figure 20, star-shaped, e.g. in the form of a cross as shown in Figure 21, or having three branches as shown in Figure 22, U-shaped as shown in Figure 23, H-shaped as shown in Figure 24, T-shaped as shown in Figure 25, or V-shaped as shown in Figure 26. The bristles can be hollow, e.g. being circular in shape as shown in Figure 27, or prismatic, in particular of square section as shown in Figure 28. The bristles can form ramifications, for example being snowflake-shaped as shown in Figure 29. The bristles can be prismatic in section, e.g. triangular, as shown in Figure 30, square as shown in Figure 31, hexagonal as shown in Figure 32, or oblong, in particular lenticular as shown in Figure 33 or hourglass-shaped as shown in Figure 34.

It is also possible to use bristles having portions that are hinged relative to one another, as shown in Figure 35.

It is also possible to use bristles presenting at least one capillary groove 65, as shown in Figure 36.

The bristles used can optionally be treated. In particular, the bristles can be subjected to treatment for forming balls 66 at their ends as shown in Figure 37 or forks 67 as shown in Figure 38.

It is possible to use bristles that are flocked as shown in Figure 39 or bristles made by extruding a plastics material containing a fill of particles 68, for example in order to confer microrelief to the surface of the bristle as shown in Figure 40, or to confer magnetic, bacteriostatic, improved sliding, or other properties thereto.

The bristles can also be undulating bristles as shown in Figure 41 or they could be bristles that have been subjected to heat treatment in order to give them a curved shape, as shown in Figure 42.

The bristles of an applicator element 5 need not all be of the same kind nor of the same length.

Advantageously, bristles are selected of cross-section that can be inscribed in a circle of diameter lying in the range about  $6/100^{\text{ths}}$  of a millimeter to about  $30/100^{\text{ths}}$  of a millimeter, and preferably in the range  
5  $8/100^{\text{ths}}$  of a millimeter to  $20/100^{\text{ths}}$  of a millimeter.

The apparent length of the bristles, i.e. the length extending between the surface of the support 15 and the free end of the bristles can lie in the range about 0.5 mm to about 20 mm, and preferably in the range 1 mm  
10 to 10 mm.

Throughout the description, including in the claims, the term "comprising a" should be understood as being synonymous with "comprising at least one" unless specified to the contrary.

CLAIMS

1. An applicator for applying a cosmetic, in particular to the eyelashes or the eyebrows, the applicator being characterized by the fact that it comprises an applicator  
5 element (5) comprising:
- a support (15) of plastics material; and
  - at least one bundle (20) of bristles carried by the support, a first end of the bundle defining a first row (50) of bristles extending in the longitudinal  
10 direction of the support, the bundle (20) being split going away from said first end into at least two sub-bundles defining second and third rows (30, 40) of bristles extending at least in part outside the support.
- 15 2. An applicator according to claim 1, characterized by the fact that it presents three rows (30, 40, 50) of bristles extending outside the support.
- 20 3. An applicator according to claim 1 or claim 2, characterized by the fact that the first row (50) comprises a number of bristles that is substantially equal to the total number of bristles in the second and third rows (30, 40).
- 25 4. An applicator according to any preceding claim, characterized by the fact that the second and third rows (30, 40) of bristles comprise respective successions of tufts (33, 43) exiting the support via respective  
30 distinct orifices (32, 42).
5. An applicator according to any preceding claim, characterized by the fact that the first row (50) comprises a substantially continuous sheet of bristles.
- 35 6. An applicator according to any preceding claim, characterized by the fact that the bundle (20) of

bristles is split to form the second and third rows (30, 40) inside the support (15).

5 7. An applicator according to any one of claims 1 to 5, characterized by the fact that the bundle (20) of bristles is split to form the second and third rows (30, 40) outside the support (15).

10 8. An applicator according to any preceding claim, characterized by the fact that the second and third rows (30, 40) of bristles extend from one side of the support (15) relative to a separation plane (S) containing the longitudinal axis (X) of the support (15), while the first row (50) extends from the opposite side.

15

9. An applicator according to any preceding claim, characterized by the fact that the bristles are held to the support (15) by overmolding the support material on the bristles.

20

10. An applicator according to any one of claims 1 to 8, characterized by the fact that the bristles are held to the support (15) by local melting of material.

25 11. An applicator according to any preceding claim, characterized by the fact that the support (15) is made with at least one row of teeth (60).

30 12. An applicator according to claim 11, characterized by the fact that the row of teeth (60) extends between the second and third rows (30, 40) of bristles.

35 13. An applicator according to any preceding claim, characterized by the fact that the major dimension of the support (15) in a plane perpendicular to its longitudinal axis (X) is less than or equal to 5 mm.



14. An applicator according to any preceding claim,  
characterized by the fact that the second row (30)  
comprises tufts (33) of bristles disposed substantially  
at the same level along the axis (X) as tufts (43) of  
5 bristles of the third row (40).

15. An applicator according to any one of claims 1 to 13,  
characterized by the fact that the second row comprises  
tufts of bristles that are axially offset relative to the  
10 tufts of bristles of the third row.

16. An applicator according to any preceding claim,  
characterized by the fact that the tufts of bristles  
obtained by splitting the bundle (20) of bristles exit  
15 via openings situated respectively in two opposite faces  
(31, 41) of the support (15).

17. An applicator according to any one of claims 1 to 15,  
characterized by the fact that the tufts of bristles  
20 obtained by splitting the bundle (20) of bristles exit  
via openings situated in the same face of the support.

18. An applicator according to any preceding claim,  
characterized by the fact that the longitudinal axis (X)  
25 of the support (15) is rectilinear.

19. An applicator according to any one of claims 1 to 17,  
characterized by the fact that the longitudinal axis (X)  
of the support is curvilinear.

30

20. An applicator according to any preceding claim,  
characterized by the fact that the apparent length of the  
bristles of at least one row varies along the  
longitudinal axis (X) of the support (15).

35

21. An applicator according to any preceding claim,  
characterized by the fact that it includes orifices

through which the bristles leave the support that present axes which are perpendicular to the longitudinal axis of the support.

- 5     22. An applicator according to any one of claims 1 to 20, characterized by the fact that it includes orifices through which the bristles leave the support that present axes which are directed obliquely relative to the longitudinal axis (X) of the support (15).
- 10     23. An applicator according to any preceding claim, characterized by the fact that the support material is a rigid or semi-rigid plastics material or an elastomer.
- 15     24. An applicator according to any preceding claim, characterized by the fact that the applicator element is fixed to one end of a stem (4) whose other end is secured to a handle member (6) which also constitutes a cap for closing a receptacle (2).
- 20     25. An applicator according to claim 24, characterized by the fact that the support (15) is fitted to the stem (4).
- 25     26. An applicator according to claim 24, characterized by the fact that the support (15) is made integrally with the stem (4).
- 30     27. A packaging and applicator device including an applicator as defined in any preceding claim.
- 35     28. A device according to the preceding claim, characterized by the fact that it includes a receptacle (2) containing the substance to be applied and a wiper member (8) for wiping the applicator element (5) as it leaves the receptacle.

A B S T R A C T

The present invention provides an applicator for  
applying a cosmetic, in particular to the eyelashes or  
5 the eyebrows, the applicator being characterized by the  
fact that it comprises an applicator element (5)  
comprising:

- a support (15) of plastics material; and
  - at least one bundle (20) of bristles carried by
- 10 the support, a first end of the bundle defining a first  
row (50) of bristles extending in the longitudinal  
direction of the support, the bundle (20) being split  
going away from said first end into at least two sub-  
bundles defining second and third rows (30, 40) of
- 15 bristles extending at least in part outside the support.